

WHAT IS CLAIMED IS:

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1. A magnetic assembly for being received in an armature slot for retaining armature coil components therewithin, said assembly having a longitudinal dimension generally parallel to an axis of said armature slot and a thickness dimension in a direction generally perpendicular to said longitudinal dimension and aligned in a depth direction said armature slot, said magnetic assembly comprising:

a magnetic armature wedge structure including a molded body of a resin material having a magnetic material embedded therewithin, said magnetic material being embedded in said molded body so as to be disposed along substantially an entire length thereof.

2. A magnetic assembly as in claim 1, further comprising a magnetic wedge slide adjacent said magnetic armature wedge structure, between said magnetic armature wedge structure and said armature coil components, said magnetic wedge slide being formed from resin having ferromagnetic particles distributed therethrough.

3. A magnetic assembly as in claim 2, wherein a volumetric mixing ratio of the magnetic wedge slide, defined as

$$\eta_{mag} = \frac{V_{mag}}{V_{mag} + V_{resin}}$$

where V_{mag} is the volume of magnetic particles and V_{resin} is the resin volume, is in range of about 20 - 80% .

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4. A magnetic assembly as in claim 1, wherein said magnetic material embedded in said molded body of said magnetic armature wedge structure comprises a pair of oppositely wound wires attached at respective ends.

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5. A magnetic assembly as in claim 1, wherein said magnetic material embedded in said molded body of said magnetic armature wedge structure comprises a plurality of sticks of magnetic material, each said stick being oriented so that a longitudinal axis thereof is generally transverse to each of said length dimension and said thickness dimension of said wedge.

6. A magnetic assembly as in claim 5, wherein each said stick is comprised of silicon/iron for increasing slot leakage reactance.

7. A magnetic assembly as in claim 5, wherein each said stick is coated with a non-metallic material prior to being embedded in the molded body.

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8. A magnetic assembly as in claim 1, wherein said magnetic material embedded in said molded body of said magnetic armature wedge structure comprises a plurality of laminated plates of magnetic material, each said plate being oriented in a direction generally transverse to said length dimension.

9. A magnetic assembly as in claim 8, wherein each said laminated plate is formed from silicon/iron for increasing slot leakage reactance.

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10. A magnetic assembly as in claim 1, wherein said magnetic material embedded in said molded body of said magnetic armature wedge structure comprises a magnetic core made from mixing resin and ferromagnetic particles.

11. A magnetic assembly as in claim 10, wherein said magnetic core has a generally circular cross-sectional shape.

12. A method of increasing generator subtransient reactance comprising disposing a magnetic assembly including providing at least one of a magnetic armature wedge structure and a magnetic wedge slide in an

armature slot for retaining armature coil components therewithin, thereby defining a magnetic flux bridge to increase armature slot leakage flux and thereby increase armature slot leakage reactance.

13. A method as in claim 12, wherein said step of providing a magnetic armature wedge structure comprises providing a molded wedge having a magnetic material embedded therewithin.

14. A method as in claim 13, wherein said magnetic material embedded in said molded body of said magnetic armature wedge structure comprises a pair of oppositely wound wires attached at respective ends.

15. A method as in claim 13, wherein said magnetic material embedded in said molded body of said magnetic armature wedge structure comprises a plurality of sticks of silicon/iron for increasing slot leakage reactance.

16. A method as in claim 15, wherein each said stick is coated with a non-metallic material prior to being embedded in the molded body.

17. A method as in claim 13, wherein said magnetic material embedded in said molded body of said magnetic armature wedge structure comprises a plurality of laminated plates of magnetic material, each formed from silicon/iron for increasing slot leakage reactance.

18. A method as in claim 13, wherein said magnetic material embedded in said molded body of said magnetic armature wedge structure comprises a magnetic core made from mixing resin and ferromagnetic particles.

19. A method as in claim 12, wherein said magnetic wedge slide is formed from resin having ferromagnetic particles distributed therethrough.

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